

ANTHRACITE COAL MINING

SYNOPSIS OF FILM

OCT 18 1917

1. A Modern Coal Mine in Pennsylvania.
2. Scenes Above Ground.
3. Coal Miner.
4. Cable Drum Operating Cars.
5. The Opening of the Slope.
6. Car of Waste Rock Leaving Slope.
7. Coal is Carried to Top of Shaft and Dumped into Conveyors.
8. Conveying Coal to Top of Breaker.
9. Picking Out Large Pieces of Rock before Coal is Crushed.
10. Coal is Automatically Graded for Size by Vibrating Hopper.
11. "Breaker Boys" Picking out Slate.
12. Spiral Chutes Lower the Coal from Floor to Floor.
13. Mechanical "Breaker Boy."
14. Washing Coal.
15. Shipping Coal on the Delaware River.
16. Railroad Coal Pier.
17. Coal Barges and Tug Boat.
18. Loading "Arms." Barges are Quickly Filled.
19. Modern Methods of Unloading Coal Vessels.
20. Ten Thousand Tons of Coal.

ANTHRACITE COAL

COAL is the most important of all natural fuels. The value of a fuel depends upon its place of occurrence, cost of production, transportation, storage, the amount of heat from a given weight of it, and the rapidity, efficiency, and smokelessness of its burning with air. In certain respects, coal is inferior to some fuels, but has many points of superiority over every other natural fuel. It does not contain as much combustible matter as peat, nor does it give such intense heat as oil; but from an economic standpoint it is far superior to both.

There is some difference of opinion as to the method of formation of coal, and as to the material of which it was made. Some geologists believe that the matter from which coal was made was carried by streams and deposited in shallow lakes where we now find beds of coal; while others believe that vegetation grew in the place where the coal is found.

Coal is assuredly of vegetable origin; it is the product of trees and ferns of dense forests which grew in a warm and humid climate; these vegetable products were slowly buried by overwashed sands and clays now forming beds of sandstones and shales. The sandstones and clays overlying the submerged coal bed formed the soil for renewed forest growth; thus successive beds of coal were formed one over the other, separated by beds of sand and clay. The weight of accumulated deposits compressed the vegetable layers.

It is estimated that the layers of anthracite coal have been compressed into one-ninth the thickness of the vegetable layers from which they were formed.

A small amount of clay was washed in with the vegetable

layers. This forms the incombustible part of the coal, called ash. If too abundant, the value of the coal is much reduced.

The three kinds of coal known commercially are bituminous, cannel, and anthracite. Some geologists believe that bituminous coal is an earlier stage in the formation of anthracite, and indicate the most important forms of coal in the order of their development as peat, lignite, bituminous, and anthracite. Others believe that the bituminous has reached its final development, and that its form is dependent upon the different kind of vegetation from which it was made. Peat and lignite and bituminous coal are widely distributed, but the known deposits of anthracite coal are comparatively few. Eastern Pennsylvania supplies practically all the anthracite used in the United States. The production in the last few years averages over 70,000,000 tons, which is less than half the production of bituminous coal. Most of the anthracite coal is shipped to New England and to the Middle Atlantic States, chiefly for domestic use. Bituminous coal is used for the most part near where it is mined and is burned to produce both heat and power.

Coal has been used in the United States only since the latter part of the eighteenth century. The first cargo of coal was shipped to Boston in 1823. Without coal, steam, and steel, civilization could not have advanced as it has in the last one hundred years, and the great inventions of the industrial world would have been of no avail. Can we imagine living without trains, electric cars, and steamboats, without great factories, without gas, without a thousand things we take for granted, but whose existence depends upon coal?

In the film showing the coal industry, we have first a general view of the surface plant of a coal mine, showing on

the left the machine shop and hospital, in the centre the power house and the railroad, and on the right the shaft tower where the coal is sorted. During this scene, a car of waste—slate and rock—leaves the opening. The shaft is usually nearly vertical, with tunnels at various levels running along beds of coal.

Now is shown a typical miner with his cap light burning. The acetylene gas lamp has now superseded the old oil lamp to a great extent.

The coal is drilled by hand, steam, or air; blasted and partially broken; loaded into cars, which are run along tunnels to shafts and there brought to the surface by steel cables wound on enormous drums (as shown in the next scene); and dumped into bins. From these the coal is taken on an endless chain of "conveyors," which carry it to the top of the "breaker." From the conveyors the coal is carried by gravity down an inclined wooden chute, at the sides of which men are stationed to remove the pieces that are too large to pass through the rolls of the "breaker." From the chute the coal passes directly into the "breaker," where it is crushed into smaller pieces, and is carried along to "shakers" or perforated platforms which separate the various sizes.

The title of the scene, "Breaker Boys," clearly tells where they work. These boys inspect the coal as it passes from the shakers down the chutes, removing the slate. The chutes are of two kinds, the inclined wooden chutes and the metal spiral chutes. The chutes lower the coal gently from floor to floor, preventing breakage. A machine, which is rapidly replacing the breaker boys in modern coal mines, is an inclined platform containing many slots through which the heavy slate passes while the lighter coal is carried over to the chute leading to the washing machines.

Water, pumped by steam from the mines, is used to remove the fine wet dust which clings to the coal. A machine is shown moving with an "eccentric" motion, shaking the coal, and allowing the heavy rock to settle to the bottom while the lighter coal is floated out over the top and sent to receiving bins. Two scenes in succession illustrate these processes.

We are now at "The Opening of the Shaft," where a car containing waste is seen drawn by its steel cable, which is run over revolving wooden drums to prevent unnecessary wear. The next scene shows a mule, one of a few of many thousands formerly employed in and around mines, which takes the car as it reaches the top of the slope and pulls it to the waste pile.

The Delaware River is the great water outlet for anthracite coal. Here a coal pier is shown with coal-laden cars; also a close view of an "arm," or chute, which, in the next scene, is loading a barge with coal, first the hold and then the deck.

We next see the unloading of coal from coal vessels. Huge trestles with cars let down by cables into the holds are shown. These cars are each loaded with coal, hauled up onto the bridgelike structure, and then drawn back to land and dumped, making immense piles of coal, as a near view shows. From here the coal is transported to different parts of the country, particularly to New York state and to New England.

QUESTIONS, TOPICS, SUGGESTIONS

1. Describe origin of coal.
2. What is its effect on the industries of the world?
3. What cities owe their development to coal?
4. Locate the great anthracite coal field of the United States.
5. What canals have been built to facilitate the transportation of coal?
6. Which is cheaper, rail or water transportation? Why?
7. Describe the living condition of a coal miner and his family.
8. Who make up the greater part of the population of coal mining regions? Why?

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